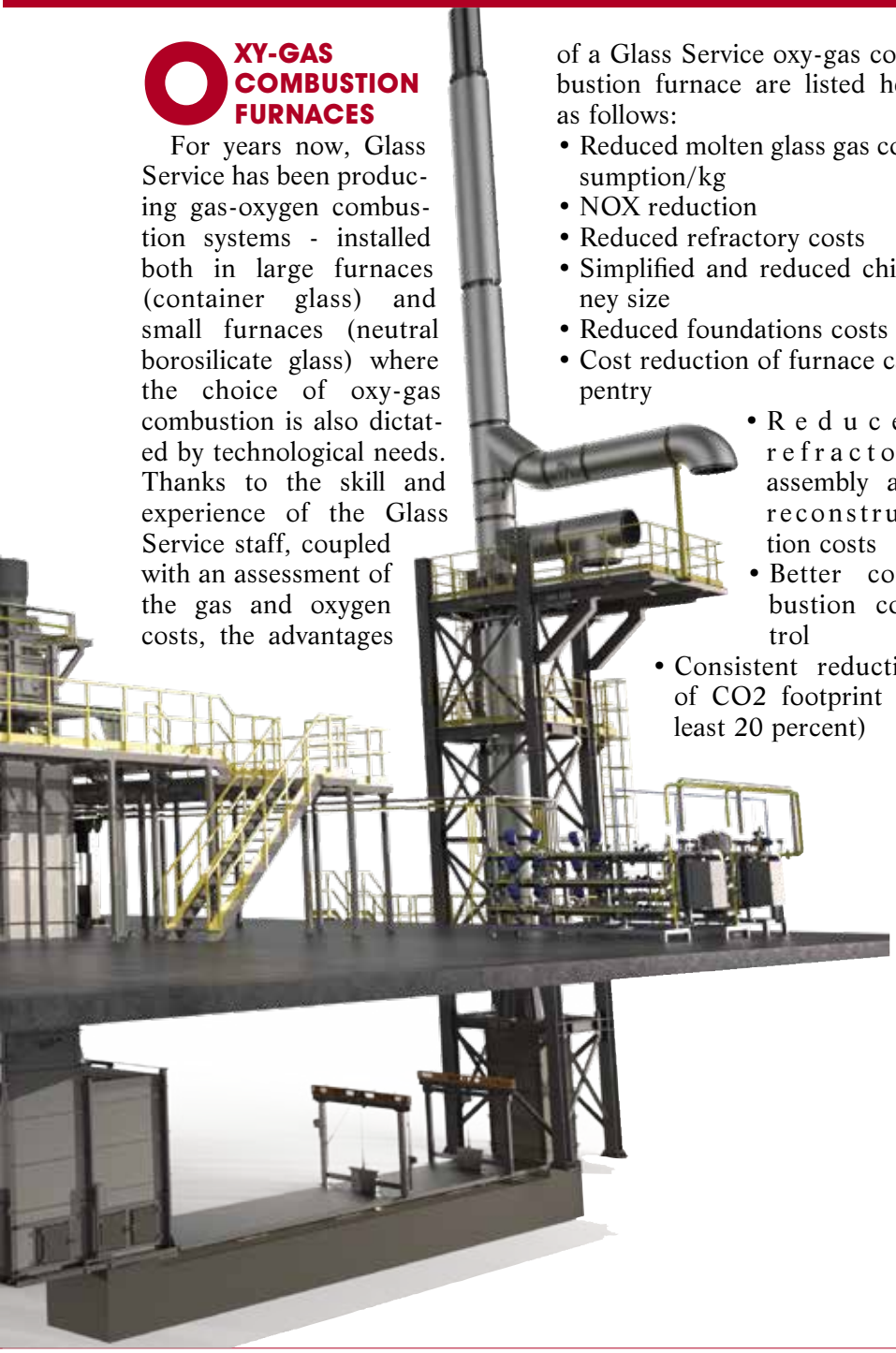
GLASS SERVICE ITALIA's efficiency-adding, emissions-cutting solutions at Glasstec

Recently, the urgency to solve problems related to energy savings and CO2 footprint has forced a boost in technological innovation, especially in the glass industry. Over many years Glass Service has studied, tested and applied new solutions, step by step, on its systems and since 2010 has established itself as a leader in the production of extremely complex and technologically advanced furnaces for neutral borosilicate glass production.



OXY-GAS COMBUSTION FURNACES

For years now, Glass Service has been producing gas-oxygen combustion systems - installed both in large furnaces (container glass) and small furnaces (neutral borosilicate glass) where the choice of oxy-gas combustion is also dictated by technological needs. Thanks to the skill and experience of the Glass Service staff, coupled with an assessment of the gas and oxygen costs, the advantages of a Glass Service oxy-gas combustion furnace are listed here as follows:

- Reduced molten glass gas consumption/kg
- NOX reduction
- Reduced refractory costs
- Simplified and reduced chimney size
- Reduced foundations costs
- Cost reduction of furnace carpentry
- Reduced refractory assembly and reconstruction costs
- Better combustion control
- Consistent reduction of CO2 footprint (at least 20 percent)

ELECTRIC BOOSTERS

Glass Service has over 10 years' experience installing dozens of electric booster systems, which display the following advantages:

- Internal production of electrode holders
- Booster systems controlled either by thyristors (up to 800 kW) or by variable voltage transformers (for larger sizes)
- Barrier boosters
- Power boosters
- Evaluation of actual energy saving in relation to possible alternatives of the "fossil / electric heating" ratio
- Optimizing the position of the electrodes and the circulating currents
- One or more boosters helps to reduce CO2 emissions

MIXED-MELT FURNACES

By integrating oxy-gas combustion systems and the extended application of electric booster systems at the bottom of the furnace, Glass Service has created more than 20 mixed-melt furnaces for producing hydrolytic Class I neutral glass for pharmaceutical applications. Multiple sole booster systems achieve electric melting while oxy-gas systems achieve fossil fuel combustion. Here positive results have led Glass Service to develop mixed-melt furnaces up to current capacities that are presumed to reach 70-80

TPD where electrical components attaining high fusion energy percentages obtain a much reduced gas consumption. Consequently, a very low CO2 footprint that can maintain a high flexibility with production quality guaranteed by cross-fired furnaces with oxy-gas combustion.

CHANNEL AND DISTRIBUTOR INTERVENTIONS

Often overlooked, these interventions can both improve the energy balance and reduce CO2 emissions. Here Glass Service is actively working on:

- Use of oxy-gas burners instead of normal gas-air premix burners - resulting in more than double the efficiency of the combustion of the channels
- Realization of electrical channels with radiant elements
- Installation of heat recovery and redistribution units above the chimneys
- Upstream insertion of the gas reduction stations of the working ends, of Wobbe Index measurement and stabilization systems (by means of controlled injection of compressed air) in order to guarantee the stability of the operating conditions - mindful that a fluctuation of the calorific value inlet can lead to an extra 4-5 percent gas consumption due to unnecessary excess gas, or to the equally unnecessary excess of combustion air
- Stabilization of the combustion air temperature by inserting heaters downstream of the combustion fans
- In relation to the above, Glass Service can study various scenarios, comparing consumption in classic conditions - or in the case of oxy-gas combustion or electric channels
- Finally, Glass Service has started testing H2-O2 burners of its own design

Glass Service team members will be at Glasstec 2022 Pavilion 13, Stand F14 to answer any questions - providing a long list of plants the company has built while explaining the cost-saving advantages of its products. ■